



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

09/711,997

11/14/2000

P K Chidambaran

1-1-1-1-1-1

8961

22046

7590

03/26/2004

LUCENT TECHNOLOGIES INC.

DOCKET ADMINISTRATOR

101 CRAWFORDS CORNER ROAD - ROOM 3J-219

HOLMDEL, NJ 07733

EXAMINER

HA, YVONNE QUY M

ART UNIT

PAPER NUMBER

2664

DATE MAILED: 03/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/711,997

Applicant(s)

CHIDAMBARAN ET AL.

Examiner

Yvonne Q. Ha

Art Unit

2664

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2000.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 11, 13-19, 24, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Brolin et al. (US Patent 6,359,859).

Referring to claim 1, Brolin discloses an interface device (i.e. line unit) for coupling a group of service cards (i.e. service unit slots) of a packet based switch to a switching core (i.e. switch fabric, ATM) (figure 1), said group of service cards including one or more online service cards and one or more protection cards (i.e. active/standby slots; col. 5, lines 6-10, col. 10, lines 46-48), said device comprising (col. 4, lines 63-67): a plurality of core side input and output ports for coupling to said switching core (col. 5, lines 11-45) and a plurality of card side input and output ports for coupling to said service cards (col. 5, lines 11-45); a data flow switch function coupled between said core side ports and said card side ports (col. 5, lines 35-41, figure 1), said data flow switch function operable to complete data flow paths between said core side ports and said card side ports (col. 5, lines 35-41); and a link failure detector (col. 14, lines 49-67, i.e. routing ASIC for path selection and monitoring incoming path) operable to detect a communications failure on a communications link associated with one of said on-line service cards (col. 12, lines 9-23; figures 5, 7), said link failure detector further operable to alter said

Art Unit: 2664

data flow switch function such that one or more of said data flow paths associated with one of said on-line service cards are switched to one of said protection cards (col. 16, lines 22-47; figures 5, 7).

Referring to claims 2, 17, and 25, Brolin discloses all aspects of the claimed invention and further teaches a bandwidth allotment between said service cards and said interface device is greater than available bandwidth between said switching core and said interface device, thereby enabling connection of said protection cards without corresponding usage of switching core bandwidth (col. 13, lines 28-35; col. 17-18, lines 64-67, 1-9).

Referring to claims 3 and 18, Brolin discloses all aspects of the claimed invention and further teaches an aggregation function coupled between said card side ports and said core side ports, said aggregation function operable to combine multiple data streams into larger bandwidth threads (col. 18, lines 10-35).

Referring to claims 4 and 19, Brolin discloses all aspects of the claimed invention and further teaches data flow switch function switches threads between said on-line cards and said protection card (col. 16, lines 22-47; figures 5, 7).

Referring to claim 5, Brolin discloses all aspects of the claimed invention and further teaches a digital processor coupled to said link failure detector, said digital processor being coupled to said data flow switch function to control the activation thereof in response to detection of a link failure (col. 13, lines 28-49; figure 7, references 141, 142).

Referring to claim 11, Brolin discloses all aspects of the claimed invention and further teaches link failure detector includes a receiver for monitoring per flow test cells (col. 13, lines 28-38; ASIC routing performs unidirectional path selection).

Art Unit: 2664

Referring to claim 13, Brolin discloses all aspects of the claimed invention and further teaches service cards are selected from the group consisting of ATM, IP frame relay and TDM (col. 6, lines 5-11).

Referring to claim 14, Brolin discloses all aspects of the claimed invention and further teaches service cards include traffic management functionality (col. 17, lines 45-56, service units to ATM switch unit which performs routing control and traffic management).

Referring to claim 15, Brolin discloses all aspects of the claimed invention and further teaches interface device includes at least one serializer/deserializer coupled to said aggregator (col. 8, lines 24-41).

Referring to claims 16 and 24, Brolin discloses an interface device for reducing the amount of core bandwidth necessary to be allotted to support both on-line service cards and back up protection cards (i.e. active/standby slots; col. 5, lines 6-10, col. 10, lines 46-48) in a multi-service switch, said device being coupled between said service cards and said switching core (i.e. switch fabric, ATM) (figure 1), said device comprising (col. 4, lines 63-67): a first plurality of input and output ports for coupling to both said on-line service cards and said protection cards (col. 5, lines 11-45); a second plurality of input and output ports coupled to said switching core (col. 5, lines 11-45); a data flow switch function coupled between said first plurality of input and output ports and said second plurality of input and output ports (col. 5, lines 35-41, figure 1) to a link failure detector (col. 14, lines 49-67, i.e. routing ASIC for path selection and monitoring incoming path) also coupled between first plurality of input and output ports and said second plurality of input and output ports (col. 12, lines 9-23; figures 5, 7); and a controller coupled to said link failure detector (col. 13, lines 28-49; figure 7, references 141,142) and said data flow

Art Unit: 2664

switch ins function, said controller operable to switch a data flow route between said service cards and said switching core from one of said on-line service cards to one of said protection cards upon detection of a link failure (col. 16, lines 22-47; figures 5, 7) by said link failure detector.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 6-10, 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brolin et al. (US Patent 6,359,859) in view of Bronte et al. (US Patent 5,621,720).

Referring to claims 6 and 21, Brolin discloses all aspects of the claimed invention but failed to teach each of said service cards is assigned an address, each packet traversing said switch also having an address, wherein upon detection of a link failure, said processor is operable to swap the address of one or more of said ports assigned to a failed on-line service card with that of said ports assigned to a protection service card to accomplish data flow switching to said protection card. However, Bronte discloses transfer data in 16 bit entities from an 8 bit (col. 47-48, lines 55-67; lines 1-14; figure 32) and transmit/receive FIFO pointers (figure 32). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Brolin hybrid STM/ATM add-drop multiplexer to Bronte multi-channel alignment. Brolin teaches a failure detector to detect a communication link, with active/standby slots, Bronte teaches the different bits data transfer of input/output. It is obvious that the

Art Unit: 2664

swapping of active slot (which is the failed slot at present time) to standby slot (which is the new slot) would require swapping of addresses due to the fact that each slot has a pointer which represent an address as shown in Bronte's figure 32.

Referring to claims 7 and 20, Brolin discloses all aspects of the claimed invention and further teaches data flow switching is accomplished on a per flow basis, data flow switching of one particular flow not affecting other different flows in said switch (col. 18, lines 10-35, flow control of data receive by ASCI routing unit).

Referring to claims 8 and 22, Brolin discloses all aspects of the claimed invention but failed to teach address swap of on-line service card and protection card is accomplished in a look-up table. However, Bronte discloses transfer data in 16 bit entities from an 8 bit (col. 47-48, lines 55-67; lines 1-14; figure 32) and transmit/receive FIFO pointers (figure 32, which represents table with addresses). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Brolin hybrid STM/ATM add-drop multiplexer to Bronte multi-channel alignment. Brolin teaches a failure detector to detect a communication link, with active/standby slots, Bronte teaches the different bits data transfer of input/output. It is obvious that the swapping of active slot (which is the failed slot at present time) to standby slot (which is the new slot) would require swapping of addresses due to the fact that each slot has a pointer which represent an address as shown in Bronte's figure 32. The address table would reside in the TXT/RX FIFO pointers (figure 32, references 1310, 1308).

Referring to claims 9 and 23, Brolin discloses all aspects of the claimed invention but failed to teach address is a hierarchical address scheme having multiple fields pertaining to various type links within said interface. However, Bronte discloses a configuration content CAM

Art Unit: 2664

provides the mechanism for the microprocessor to configure each of the 12 channels and select which channel is associated with which PCM HWY time slot (col. 48, lines 21-47). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Brolin hybrid STM/ATM add-drop multiplexer to Bronte multi-channel alignment. Brolin teaches a failure detector to detect a communication link, with active/standby slots, Bronte teaches the different bits data transfer of input/output and multi services, multi-channels. There is a need to improve the performance monitoring of a large number of DS3 channels (high speed) and embedded DS1 channels (low speed). It would be obvious to implement a hierarchical address scheme to differentiate service types, based on speed or service of the multi-channel alignment.

Referring to claim 10, Brolin discloses all aspects of the claimed invention but failed to teach link failure detector includes a monitor to detect failures selected from the group consisting of bit interleaved parity, parity, and CRC. However, Bronte discloses monitoring of AIS alarms CRC error counts for DS1 performance monitoring (col. 27, lines 45-67, col. 28 lines 28-32). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Brolin hybrid STM/ATM add-drop multiplexer to Bronte multi-channel alignment. Brolin teaches a failure detector to detect a communication link, which indicate the system has some mechanism of alarm and correction error embedded in the network. Bonte teaches performance monitoring of DS1 based on Bellcore Standard which including CRC and bit parity. It is well known that CRC is a common method of establishing that data was correctly received in data communications.

Art Unit: 2664

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Brolin et al. (US Patent 6,359,859) in view of Stelliga (US Patent 6,625,650).

Referring to claim 12, Brolin discloses all aspects of the claimed invention but failed to teach service cards are layer 2 or layer 3 cards. However, Stelliga discloses a protocol interaction of one host to remote host (col. 4, lines 20-28, based on OSI model); transferring of data from source to destination on different traffic types (col. 5, lines 56-63; figure 4). At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the teaching of Brolin hybrid STM/ATM add-drop multiplexer to Stelliga multilayer broadband provisioning. As defined in the OSI model of networking system, seven layers are divided in the model where each layer interacts directly with the layer immediately beneath it and provides facilities for use by the layer above it. Protocols enable an entity in one host to interact with corresponding an entity at the layer in a remote host. The teaching of Brolin and Stelliga multi-channel STM/ATM where layer 3 routing needs to be performed based on a layer-2 lookup of packets received by the switching system. Based on the OSI model, the protocol interaction from one host to a remote host.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Koenig et al. (US Patent 6,351,452) discloses telecommunication device with centralized processing, redundancy protection, and on demand insertion of signaling bits

Art Unit: 2664

- Neuendorff et al. (US Patent 6,657,969) discloses generation of synchronous transport signal data used for network protection operation

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvonne Q. Ha whose telephone number is 703-305-8392. The examiner can normally be reached on Monday-Friday 7a.m.-4p.m. Eastern.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ajit Patel can be reached on 703-308-5347. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

YQH


Ajit Patel
Primary Examiner